Understanding efficiency of agrarian organisation

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UNDERSTANDING EFFICIENCY OF AGRARIAN ORGANISATION

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ABSTRACT

In this paper we incorporate achievements of interdisciplinary New Institutional and Transaction Costs Economics (combining Economics, Organization, Law, Sociology, Behavioral and Political Sciences) into analysis of agrarian organizations and suggest a framework for evaluating efficiency of different governing structures in agriculture. This new approach includes: study of farm and other agrarian organizations as a governing rather than production structure; assessment of comparative efficiency of alternative (market, contract, internal, hybrid) modes of governance; analysis of level of transaction costs and their institutional, behavioral (agents preferences, bounded rationality, tendency for opportunism), dimensional (frequency, uncertainty, assets specificity, and appropriability of transactions), and technological factors; determination of effective horizontal and vertical boundaries of farms, and other agrarian organizations; the specification of the economic role of the government and the effective forms of public interventions in agrarian sector. The paper provides new effective tools for improvement of agrarian public policies, farming and business strategies, and academic analysis.

KEY WORDS: agrarian governance, efficiency of farms and agrarian organizations, agrarian policies, transaction costs, new institutional and transaction costs economics

1. INTRODUCTION

The issue of criteria and approaches for evaluating efficiency of agrarian organizations is among the most debated in economic theory and practices [1, 2]. It has been especially topical for countries in transition around the globe [2, 3]. The question of efficiency is often politicized as unilateral priority is given to a particular type of organization - free market, private farming, family farm, cooperative etc. In more profound analyses efficiency is assessed on the base of productivity of resources use in various types of organizations. At the same time, no answer is given to fundamental question: why there have been highly sustainable "inefficient" organizations in Europe and Asia throughout transition now - unproductive subsistence and semi-market farms, production cooperatives with profitability several times lower than private farms, inefficient contractual arrangements etc.

The New Institutional Economics is a new developing methodology which explains existence and efficiency of economic organizations with their role to maximize transaction benefits and minimize transaction costs [4, 5, 6]. Divers type of farms and contractual modes are

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considered as alternative governance (rather than production) structures – forms for governing relationships between different agrarian agents [1]. *In this paper we incorporate achievements of that new developing interdisciplinary concept into analysis of agrarian organizations and suggest a framework for evaluating efficiency of different governing structures in agriculture.* Our ultimate goal is to provide new tools for improvement of public policies, farming and business strategies, and academic analyses in that important sector of social life.

2. THE TRADITIONAL APPROACH

Broadly applied traditional approach for evaluating efficiency of economic organizations is based on assessment of *efficiency of production costs* and *productivity of employed recourses.* Accordingly, a great number of indicators are used to express efficiency of organizations through determining the level of use of factors (land, labor, capital), rate of return (pay-back, profitability) of current and long-term expenditures etc[1]. In more sophisticated (Neoclassical) models criteria for assessment of efficiency of organization is derived from the equilibrium condition of entire economic system - when marginal benefits are equalized with marginal costs[2]. The organizations using recourses with different (higher, lower) from marginal productivity are inefficient – e.g. if a farm has higher productivity than the social level (employing resources more effectively than other organizations) but it does not further invest resources to explore effective internal potential - then it is inefficient. Contrary, if a farm is performing with lower productivity, it means that it integrates more recourses than it can effectively manage (which could be effectively used by others), and therefore it is inefficient.

However, traditional approach does not answer the question: *why there exist so many organizations with different productivity of resources utilization.* If efficiency of a particular organization in low, there will always be private or social mechanism (competition, central planning) for reallocation of resources to more effective application - optimization, specialization, extension, or liquidation of organization. In a foreseeable long run there will exist only “effective” organizations, which govern resources on (or close to) the socially acceptable level of efficiency. What is more, traditional approach estimates different organizations without even looking for answering the question: *why there exist so big variety of types of economic organizations in agriculture* (one-person farms, group farms, cooperatives and firms of different kind, subsistent farms, small and large farms).

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[1] E.g. profitability of Bulgarian cooperatives has been 5 times lower than in private farms [7].

[2] That definition of efficiency (Pigou) is found in all Economics textbooks. “It is a central characteristic of welfare economics that outcomes derived from the basic neoclassical model are used as a criterion of efficiency. Outcomes that deviate from outcomes in model based on fully defined exclusive rights and costless transactions are called "inefficient" [8].

3. THE NEW APPROACH

New Institutional Economics explains existence of different agrarian organizations in their role to *govern transactions between individual agents* [9, 10]. Usually carrying out individual transacting (land and labor supply; marketing) is associated with significant costs - for finding best prices and partners; negotiation; contract writing; registration; enforcement of contacted terms; disputing including through a court system etc. Thus, economic efficiency of agrarian organizations should take into account not only *their capacity to minimize production costs, but also their ability to economize on transaction costs [1]*. "Indeed it is obvious that once there is shift from a "frictionless" universe scare resources have to be used to effect transactions, protect property rights and so on. This means that system's total resource endowment can no longer be devoted solely to the production of normal commodities" [11]. Moreover, both (current) costs for using of transacting forms and long-term costs for their development (initiation, modernization, liquidation) have to be taken into account [1].

If execution of transactions was not associated with costs ("zero" transaction costs) then the mode of organization would have no economic importance [4]. Agrarian agents would govern their relationships with the *same (equal) efficiency* though free market (prices movements), and private organizations of different types (contracts, firms), and collective decision making (cooperative, association), and in a nationwide hierarchy (single private or state company). Then technological opportunities for economies of scale and scope (maximum productivity of resources) would be easily achieved. All information for the effective potential of transactions (optimization of resources, satisfying new demands) would be costlessly obtained by everybody, and individual agents would costlessly trade available resources in mutual benefit until exhausting potential for increasing productivity ('Pareto optimum/efficiency").

However, often high transaction costs make difficult or block otherwise efficient (mutually beneficial) for all parties transactions. For instance, despite the great pay-off of investments in agrarian research and innovation, market and private agents do not organize such activity because of their high uncertainty and low market and private appropriability [12]. Since carrying out transactions is connected with costs, *rational agents will seek, chose, and develop such modes for organization of their activity and exchanges which maximize their transacting benefits and minimize associated costs.* The type of organization is crucial since various governing structures give *unequal* possibilities for participants to coordinate and adapt transactions, stimulate acceptable behavior of counterparts, protect their rights and investments from unwanted expropriation. Therefore, *in the long-run inefficient forms will be abandoned and only effective modes for organization of agrarian transactions will dominate*.

Each transaction has different *specific dimensions* varying according to *institutional environment* (legislation, efficiency of public contract enforcement, other formal and informal restrictions), *personal characteristics of agents* (preferences, experience, reputation, tendency

for opportunism, risk aversion), and *macroeconomic conditions* (stability, foreign trade regime etc.) [4, 13]. Since there exist *no singe* most efficient (universal) form for organization of all transactions, depending on critical dimensions of each transactions agrarian agents will use appropriate (most effective) mode for governance. Hence, in any particular moment agrarian activities will be carried out (governed) through a great variety of organizational structures: some will be governed by *"invisible hand of market"*, some will be carried out through a *special contract mode* ("private order"), some will be managed *within hierarchy* (under "visible hand of manager"), some will be *supported by a third party* (Government, NGO`s, international assistance), some would require more *complicated* and *mixed modes* [1].

Thus it must be abandoned commonly used (nirvana) approach for evaluating different form as "good" or "bad" for their own or in comparison with some no existed ideal (without transaction costs, model in other countries) [14]. Evaluation is to be directed to finding out the *comparative advantages* for initiating, establishing, and using; management, adaptation, intensification, coordination, stimulation and controlling (in short - for minimization of overall costs) of transactions, of alternative (and really possible) modes for governing of different transactions in the *specific market, institutional, natural environment*. For instance, in the condition of not well-defined and assigned private rights on farmland, and the high costs for their protection and exchange during post-communist transformation, the short-term lease and the internal integration (subsistence and semi-market farming, production cooperation) were the most efficient forms for organization of land supply in Bulgarian agriculture [7, 9].

Evaluation of efficiency of agrarian organizations has to *include not only comparative "productivity" of resources, but analyses of the level and structure of comparative transacting costs.* Besides, it should identify *factors of transaction costs in nationwide (social) scale*, which eventually slow down sustainable growth of agriculture, and lead to insufficient and unsustainable use of resources, underinvestment and low productivity in production, wide-spreading of primitive technologies, lack of innovations etc [5]. When a high level of costs for market and private transactions (which prevent or entirely block development of market and private forms) is observed then either a public intervention in agrarian transactions (assistance, regulation, in-house organization, partnership) or fundamental institutional modernization (e.g. introduction and enforcement of new private rights) should be undertaken.

4. TRANSACTION – THE BASIC UNIT OF ANALYSES

The new approach turns individual transaction and costs associated with them into a *center of economic analysis* [4, 9]. Following that new approach *firstly*, we have to determined major type of transactions in which agents managing agrarian activity (farm entrepreneurs) participates. *Secondly*, we are to identify feasible alternative forms for governance of diverse type of transacting. *Next*, we should specify various kinds of (transaction) costs associated with different type of organisation. *Finally*, we are to assess comparative efficiency of

alternative governing structures according to the criteria (minimum) transaction costs.

Main types of transactions of farm entrepreneur are associated with the supply of "factors" of production and marketing of farm output and services. Actually, *farm manager manages not (production) technology but transactions related with production.* It is not a hypothetical case when an entrepreneur is entirely engaged in managing transactions rather than participating in production activity - he hires all labor for carrying technological operations, and spends all time for governing contractual relations with inputs and service suppliers and buyers.

Major types of transactions in farming are associated with: *labor supply, supply of land and other natural resources, service supply, inputs supply, knowledge supply, innovation supply, finance supply, insurance supply,* and *realization (marketing) of output and services*. In addition, the farms entrepreneur takes part in a great variety *collective actions* for inducing public (Government) intervention in market and private transactions in his own interests [1].

In rare cases there is *only one* practically possible form for governance of agrarian activity. For example, in Japanese dispersed paddy agriculture water supply could not be conducted by individual farmers (high interdependency, nonseparability of water use) and since earliest period water use organization developed as public organization. Often the choice of governing mode is determined by *institutional restrictions* as some forms for carrying farming activities, land and labor supply, trade of output etc. could be socially unacceptable or illegal[3]. For instance, corporate and cooperative organization of farming is forbidden in many countries; market trade of farmland (natural resources) and some outputs (inputs) is illegitimate etc.

Usually, there are a big variety of *practically possible* (alternative) forms for organization of each agrarian activity (transaction). *One extreme* is to govern all transactions via free market through spot-market or classical contracts for inputs supply and marketing. For example, leasing-in farmland and long-term material assets, purchasing all services for cultivation and harvesting of output, purchasing all short-term material assets, selling all primary products on market. *Another extreme* is a close internal organization such as one-person or group subsistent farm - farmer(s) employ only own resources (land, labor, technological knowledge) and consume whole product. Between these two polls there is a *spectrum* of feasible modes for governing of transactions: various sort of long-term contracts, association, cooperation, interlinked organization, diverse hybrid forms, firms of different kind (partnerships, corporations, complex hierarchical forms) etc[4]. Identification of practically employed specific

[3] Nevertheless, when transaction costs associated with governance is not high (possibility for disclosure low, enforcement and punishment insignificant) while benefits are considerable, then more effective modes prevail - large gray/black economies are common in agriculture.

[4] E.g. transaction associated with cultivation of land by tractor can be governed in different ways: a farmer can buy (unified ownership), rent (rent contract) or lease a tractor (input and credit supply interlinked contract); farmer could buy cultivation service from market (contract

forms for transactions in different countries is object of a special *micro-economic survey*.

5. "MEASURMENT" OF TRANSACTION COSTS

One direction for evaluation of efficiency of agrarian organizations is *direct comparison of costs for each transaction in different forms.* Organization which requires less costs for is more efficient. For instance, comparison is made whether would be more economical direct (own) marketing of output or using a marketing cooperative. Data for some part of transaction costs can be found in traditional statistics and accountancy (e.g. management costs, marketing costs). Another part of transaction costs may be easily specified - costs for licensing and registration, agro-market information, promotion and marketing of output, general management, hiring lawyers and court suits, guarding property and yields, payment of bribes etc. However, a significant portion of transaction costs is either very difficult (too expensive) or impossible to be determined. In that group we can include the costs for finding best partners, negotiation, controlling and enforcement of contractual terms, organizational development, interlinked transacting, unrealized (failed) deals etc. Besides, it is often extremely complicated to separate transaction costs from traditional production expenditures[5]. For example, while executing farming operations a farmer supervises hired labor; during transportation of chemicals he negotiates marketing of output etc. Approximate estimate for the level of transaction costs could be made by interviewing farm managers. Here it is essential to indicate the level (high, low) of efforts and time devoted for governing different type of transactions: for finding needed labor for hiring, land and material inputs for purchase and lease-in; negotiating terms of exchange; monitoring implementation of contractual obligations; current adaptation of contracts to emerging new conditions; conflicts resolution; memberships in professional organizations; relationships with agrarian bureaucracy etc.

Component comparison of transacting costs could not always give idea for efficiency of organizations. Very often alternative form decreases one type of costs while increasing another type transacting costs – e.g. internalization of a transaction (replacement of market with integral mode) is associated with reduction of costs for information supply (overcoming market uncertainty), permanent (re)negotiations along with constantly changing conditions, safeguarding investments from outside opportunism. On the other hand, it enlarges costs for

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service); number of farmers may buy a tractor (joint ownership) and use it in a group (producers cooperative) or individually; farmer can join a cooperative providing cultivation services (non for profit organization); he may lease his land out to a tractor owner and share output (share tenancy contract); farmer can hire a tractorist to work on his farm (employment contract) and he may even sell cultivation service to market (profit making organization); cultivation service to farms could be subsidized by Government (trilateral mode), or provided by a municipality or state company (public organization) etc.

[5] All these "measurement problems" make it impossible to extend the traditional Neoclassical models simply by adding a new "transacting" activity [13].

organizational formation, decision making, integral management, supervising and motivation of hired labor etc. In our previous example with alternatives for marketing of farm output the "internal realization" (personal consumption, production "consumption", processing) could be chosen as more efficient form to direct sell or use of marketing cooperative. Moreover, a good part of transactions in agriculture is governed not by "pure" but through complex or interlinked modes - e.g. inputs supply in a "package" with know-how, extension or/and service supply; joint supply of inputs and credit; crediting of production against marketing of output etc. Thus, it is important to take into consideration *overall* (total) costs for organization of transactions of different types - *all external and internal transaction costs of the farm.*

Often it is difficult to select a base for comparison in view that the high transacting costs entirely block development of alternative organization. For instance, market for agrarian credit did not emerged in East Europe during most of the transition and internal supply (utilization of own finance, direct outside co-investment) was the only possible form for finance supply of farms [7]. Here the comparative level of transaction costs is impossible to be determined and appreciate "high" efficiency of the integral mode for finance supply. In that case funding with "own means" and with "bank credit" are not real alternative at all but completely different governing structures. Thus, broadly applied indicators for estimation of comparative efficiency of investments based on "opportunity costs" (discounting, payback period, internal rate of return) independent from the form of funding, have no significant economic sense.

6. FACTORS OF TRANSACTION COSTS

Another direction for evaluation of efficiency is the discrete structural analysis of alternative governing forms [4]. Since it is either very difficult or impossible to determine transaction costs for individual mode, assessment is made on *comparative costs* of alternative organizations. Besides, quantitative approach (absolute and relative measures, marginalism) is replaced by qualitative (structural) analysis and indirect assessment of transacting costs. Actually, we are interested not in absolute level of transaction costs in different form, but in organization with the lowest comparative costs for a particular transaction. Initially we have to identify critical factors of transactions in the specific market, institutional and natural environment. These factors are responsible for variation of transacting costs and are associated with: *behavioral characteristics of agrarian agents* – bounded rationality, tendency for opportunism, reputation building, risk taking, level of trust,; and with *economic dimensions of individual transactions* - frequency, uncertainty, assets specificity, and appropriability [1, 4].

Transaction costs have two *behavioral origins*: individual's bounded rationality and opportunism [4]. Agrarian agents do not possess *full information* about economic system (price ranges, demands, trade opportunities, development trends) since collection and processing of such information would be either very expensive or impossible (for future events, partners intention for cheating). In order to optimize decision-making they have to spent costs

for “increasing imperfect rationality” (data collection, analysis, forecasting, training etc.).

Furthermore, economic agents are *given to opportunism*. Accordingly, if there is opportunity for some of transacting sides to get non-punishably an extra rent from exchange he/she will likely do so[6]. It is very costly or impossible to distinguish opportunistic from non-opportunistic behavior (because of bounded rationality). Therefore, agrarian agents have to protect their transactions from hazard of opportunism through: ex ante efforts to find a reliable counterpart and to design efficient mode for partners credible commitments; and ex post investments for overcoming (through monitoring, controlling, stimulating cooperation) of possible opportunism during contract execution stage [4].

In addition, transaction costs depend on “critical dimensions” of each transaction. When *recurrence* of transactions between same partners is high, both sides are interested in working out a special form for standardization of their ongoing relationships (building incentive structure, adjustment mechanisms, conflict resolution devices). Continuation of relationships with a particular partner and designing a special mode for transacting has a high economic value. Parties restrain for opportunism which detection is “punished” by turning to competitor (losing future business). Besides, costs for development of a special mode could be effectively recovered for repeated transactions. When a transaction is incidental then possibility for opportunism is great since cheating side can not be easily punished (good reputation is not of value). Transaction costs become very high (and may block transacting) when low frequency coincides with high uncertainty and requirement for large relation-specific investments.

When *uncertainty* surrounding transactions increases then costs for overcoming uncertainty go up (bounded rationality is crucial and opportunism can emerged). Agrarian agents will seek, develop, and use such modes of organization which diminish transaction uncertainty - internal integration, cooperation, rational (relational) contract etc. There are strong mutual incentives to develop a special form for repeated transacting when high uncertainty is combined with significant relation specific investments. When transacting between same counterparts is rare, and it is not supported by specific assets, and appropriability of rights is high, then faceless (autonomous) market exchange is the most efficient mode. Depending on the levels of uncertainty and their risk aversion the agrarian agents will take different entrepreneurial risk

[6] Two major forms of opportunism can be distinguished [4]: *pre-contractual* ("adverse selection") - when some of the partners use "information asymmetry" to negotiate better contract terms; and *post-contractual* ("moral hazard") - when some counterpart takes an advantage of impossibility for full observation on his activities (by another partner or by a third party) or when he take "legal advantages" of unpredicted changes in transacting conditions (costs, prices etc.). Special *third form* of opportunism occurs in development of larger organizations [15]. Since individual benefits are often not proportional to individual efforts, everybody tends to expect others to invest costs for organizational development, and to benefit ("free ride") from the new organization.

and will get normal, low or extra than average rate of return from transactions.

Transaction costs are very high when some of the parties is to make *specific for the transaction with a particular partner investments.* In this case it is impossible to change a partner of transaction (alternative use of assets) without a big loss in value of specific capital[7]. Specific investments are "locked" in relationships with particular partner (personality of partner matters) and they cannot be returned-back by "faceless" market exchange. Costless redeployment (alternative use) of specific assets is not possible if transactions fail to occur, they are prematurely terminated, or less favorable terms are renegotiated (in contract renewal time and before end of life-span of specific capital). Thus, if transaction requires significant specific investments agents will have to design a special mode to safeguard their investments from expropriation (possible opportunism) – tied-up contracts, quasi/complete integration etc.

If *symmetrical* assets dependency (regime of bilateral trade) exists there are strong incentives in both parties to elaborate a special private mode of governance. However, when *unilateral* dependency exists then dependent side (facing mini/total monopoly) has to protect investments against possible opportunism (behavioral uncertainty) either through integrating transactions (unified organization, joint ownership, cooperative)[8]; or safeguarding them with interlinked contract, exchange of economic hostages, development of collective organization to outstand asymmetrical dependency (for price negotiation, for lobbying for Government regulations) etc.

Serious transacting problems arise when condition of assets specificity is combined with high uncertainty and low frequency of transactions. In this case elaboration of a special governing structure for private transacting is not justified (set up costs can not be recovered by occasional transactions). Specific investments are not made and transactions fail to occur. Third party involvement (local authority, Government agency, NGO, hybrid organization) in individual transacting (through assistance, arbitration, regulation) is crucial for smooth organization of transaction. Special mode for trilateral transacting such as neoclassical contract is invented to manage transactions with high uncertainty and asset specificity, and low frequency[9].

Transacting is particularly difficult when *appropriability* of rights is low [5, 14]. In this case possibility for unwanted (unequal) market or private exchange is great[10]. For transactions with

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[7] If investment in specific capital is not made, transactions either can not take place or it could occur without (or loss of) comparative advantages in respect of productivity [1].

[8] When technological opportunities for economy on scale (scope) on specific assets can be achieved. Otherwise integration of transactions will be lost-making comparing to outside price (production costs) competition.

[9] arranging a "third party participation" - e.g. determination of grades of wine, certification of special (eco, fair-trade, origins) products by an authorized agency.

[10] "Natural" low appropriability has most of agrarian intellectual products: agro-market information, agro-meteorological forecasts, a big part of new agrarian technologies and,

low appropriability the costs and benefits are independent for individual participants. Because of bounded rationality the transaction costs for protection, detection, verification, and a third-party (e.g. court) punishment of unwanted exchange (non paying consumers-opportunists) are extremely high. Principally, when the appropriability associated with a transaction is low, there is no pure market mode to protect and carry out activity effectively. Nevertheless, the respecting others rights (unwanted exchange avoided) or "granting" additional rights to others (needed transactions carried) could be governed by a "good will" or charity actions. For instance, a great number of voluntary environmental initiatives emerged driven by competition, farmers' preferences for eco-production, responds to public pressure for a sound eco-management [5]. In any case, voluntary initiatives could hardly satisfy the entire social demand especially if they require significant costs.

If appropriability is low and transactions are strongly specific (for a particular customer) the only way to carry them out is to integrate transactions (in house production, trade secrets) or elaborate effective form for securing credible commitment (joint investments, interlinks). Some private modes could be employed if a high frequency (a pay-back on investment is possible) and a mutual assets dependency (thus incentive to cooperate) exists[11]. In these instances, unwritten accords, interlinking, bilateral or collective agreements, close-membership cooperatives, codes of professional behavior, alliances, internal organization etc. are used.

Serious transaction difficulties occur (and may block transacting) when they are associated with low appropriability but require significant specific/universal investments, and are characterized with low frequency and high uncertainty[12]. Incidental character of transactions between same agents makes designing and maintenance costs for a special (private, collective) large-members organization for dealing with low appropriability very high ("free-riding" problem). Thus, there is a strong need for a "third-party" public (Government, local authority, international assistance) intervention in order to make such activity possible or more effective – public organization, public contracts, mandatory fees, introduction of new property right etc.

7. DISCRETE STRUCTURAL ANALYSIS

Next step is to evaluate effective potential of alternative modes: to minimize bounded rationality of agrarian agents and uncertainty surrounding transactions; for appropriation and protection of absolute (determined by dominating institutions) and contracted rights (and

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software for agriculture etc. Besides, all products (and activities) with big positive or negative externalities (spillovers) are to be included in this group [12].

[11] For instance, inter-dependency between a dairy farm and a milk processor in a remote region (capacity and site dependency); or a bee keeper and a neighboring orchard farm (symmetric dependency between needs of flower and needs for pollination).

[12] That is when pay-back on investment requires "mass" consumption and "collective appropriation" of benefits (and risk taking).

associated private benefits and investment) from possible opportunism; to recover long-term costs for organizational development through high frequency of transactions; to explore economy of size and scale on specific for transacting with a particular partner capital etc.

Different governance forms are alternative but *not equal* modes for organization of transactions - they have different features (advantages and disadvantages) to coordinate, control, and stimulate (maximize benefits of, minimize costs on) transactions. Since transactions have different critical dimensions and governance forms have different comparative advantages the operationalisation of the concept is done by: *"aligning transactions (which differ in their attributes) with governance structures (which differ in their costs and competence) in discriminating (mainly transaction cost economizing) way" [4]*.

Limited rationality of agents (lack of access to all information for optimal decision making, impossibility for processing information, deficiency of managerial experience) increases transaction costs, and thus there will be sleeked effective forms which diminish bounded rationality (investment for information supply, training, integration of transactions, using special organization). Possibility for opportunism of counterparts (unwanted and non-punishable "exchange") also boosts transaction costs, and hence preferences would be given to forms restricting opportunism and protecting investment from unwanted expropriation (contract specification, using economic hostages, join investment, ownership integration). Built reputation (good or bed) and existence of trust between partners, reduce transaction costs making easier or blocking transactions. Finally, depending of their risk aversion individuals will have different transaction costs for investments connected with significant uncertainty.

In general, *internal structure* has advantage for governing transaction with high uncertainty and specificity (dependency) of assets, since it diminishes bounded rationality and protects investments from outside opportunism. Contrary, transactions with high certainty (bounded rationality is not important) and universal character of assets (opportunism can not be realized since transaction can be executed with another partner without additional costs) can be carried across f*ree market* without encountering costs for development of a special private mode. *Private organization* is effective only for transactions with high recurrence between same partners, since occasional (single) transactions do not let recovering ("payback" on) investment for development of a special governance mode (mechanisms for coordination, stimulation, dispute resolution; formal registration etc.). Finally, *markets* and *private forms* are appropriate for transactions with high appropriability, since during exchange they would recover invested resources. For transaction with low appropriability private rights cannot be protected or they are enforced with extremely high costs. Thus, such transactions could be effectively governed either by hybrid (mixed public-private, quasi-public) or entirely public forms for organization.

After specification of potential of individual forms, we can build a *principle scheme with generic types for governing of transactions with different critical dimensions* (Figure 1). For

transactions with different *combination* of specific characteristics there would be suitable *different effective forms* for governing: part of agrarian transactions will be managed through free market exchange; another part will be organized through a special contract mode(s); part of transactions will be entirely internally integrated (firm), and another portion protected though a special private organization(s) outside of farm gates (cooperation, association).

Figure 1: Principle modes for governing of agrarian transactions

Generic modes	***Critical dimensions of transactions***								
	Appropriability								
	High								*Low*
	Assets Specificity								
	Low				*High*				
	Uncertainty								
	Low		*High*		*Low*		*High*		
	Frequency								
	High	*Low*	*High*	*Low*	*High*	*Low*	*High*	*Low*	
Free market	♈	♈							
Special contract			♈			♈			
Internal organization					♈		♈		
Third-party involvement				🚚				🚚	
Public intervention									🚚

♈ - *the most effective mode*; 🚚 - a *necessity for a third party involvement*

When transactions between same parties are occasional, but they are characterized with significant uncertainty, and they are with increasing or high specificity of assets, then there is no pure market or private mode for effective organization ("market failure", "contract failure"). Here a third part involvement (state, local authority, international assistance, private agent) is necessary to make such transactions more efficient or possible at all.

8. ECONOMIC BOUNDARIES OF FARM AND AGRARIAN ORGANIZATIONS

Lastly the range of feasible organization forms for each generic mode is to be identified. Variety of “internal organization” in agriculture includes: one-person farm/firm, family farm/firm, group farm/firm (partnership), cooperative, corporation, public farm/firm, joint venture etc. Corresponding forms of “free market” are: spot exchange on local/regional markets; classical contract, wholesale trade etc. The “special contract form| could be: short-term contract, long-term contract, relational contract, interlinked organization,

multilateral agreement etc. List of alternative governance mode is to be completed via special micro-economic study.

Finally, we are (and able) to determine the *effective (horizontal and vertical) boundaries* of agrarian organizations of different type. Individual forms in each generic type should be evaluated for their potential to explore economy of scale/size of specialized and/or specific capital, and comparative efficiency to minimize bounded rationality and control opportunism of participants. For instance, *one-person farm*/firm has zero internal transaction costs (one agent), but limited possibility for investment in specialized/specific human and material capital. "Internal" opportunities for increasing productivity (through investments, exploring economy of scale/size) increases along with extension of *members of coalition* (group farm, partnerships) but that is also associated with enlargement of costs for making the coalition (finding complementary and reliable partners) and the internal costs for managing the coalition (for coordination, reducing bounded rationality, controlling opportunism etc.). *Separation of ownership from management* (cooperative, corporation) gives enormous opportunities for productivity growth but it is connected with huge transacting costs (for decreasing information asymmetry between management and shareholders, decision making, controlling opportunism of hired labor and between partners). *Special contract* combines the potential for greater "control" on transactions with possibility to explore advantages of further specialization of activity. Nevertheless, it could be connected with large costs for preparing and enforcement of contracts for complex occasional transactions with high unilateral dependency. Boundaries of *agrarian markets* extend along with development of specialization and standardization of agrarian recourses, technologies, and products, and institutional conditions for protecting of private (absolute and contract) rights. However, market governance could be associated with high uncertainty, risk, and costs due to price instability, great possibility for facing opportunistic behavior, "missing market" situation etc.

Economic cooperation and exchanges let more profitable use of resources but also require additional costs. Farmers and other economic agents will tend to govern their activity and relations though the most effective forms – that which maximize their benefits and minimize their costs. Therefore, the most effective form and size of farm will be determined through optimization of *total* (production *and* transacting) costs, and *trade-offs between the gain in the productivity/benefits and the gain in transacting costs.* Hence farm will be efficient if it manages all transactions in the most profitable for the owner(s) way. *Expected benefits* for farmers could range from the monetary or non-monetary income; profit; indirect revenue; pleasure of self-employment or family enterprise; enjoyment of agricultural activities; desire for involvement in eco-preservation; increased leisure time; to other non-economic benefits.

In the specific institutional environment (legal framework, support policies, tradition, access to new technology, level of transacting costs) various types of farm will have quite different effective horizontal and vertical boundaries. For instance, in transitional conditions of high

market and institutional uncertainty, and inefficient property rights and contract enforcement system, most of the agrarian investments happened to be in a regime of high specificity (dependency). As a result (over)integrated modes such as low productive subsistent household and group farming, or large production cooperatives and agro-companies, have been dominating in Bulgaria and East Europe [Bachev, 2006]. Alternatively, in more matured economies, where markets are developed and institutions stable, agrarian assets are with more universal character. Therefore, farm borders are greatly determined by family borders, and more market and mixed (contract rather than entirely integrated) forms prevail.

Thus that is a question of *trade-off* (comparison of benefits) between the increase in productivity and the growth of transacting costs, and of minimization of overall (*production* plus *transaction*) costs of farm. Such comparison not always (most often) is quantitatively measured. However, that calculation is always made by business managers and (rational) economic agents. Economic science should not ignore “immeasurable” costs of transaction but to seek adequate forms for their incorporation into efficiency analysis.

At this stage of analysis it becomes clear the inadequacy of suggested indicators for productivity of production costs and resources for estimation of efficiency of different organizations. The opposite is true - it has to be expected significant differences in the rate of profitability on investments in an agro-firm (profit making organization) from the "pay-back" of expenditures and resources in a cooperative (member oriented organization), a public farm (non-for profit organization) or in a subsistence farm (giving opportunity for productive use of otherwise "non-tradable" resources such as family labor, land etc.).

Traditional statistical, accountancy etc. data are little suitable to test and apply our new approach. Here it is necessary to get *micro-economic data* for different transactions governed by divers type farms as well as costs and benefits associated with alternative governing structures. For this purpose it has to be organized interviews with managers of different kind of farms. Questions should give information for the specific characteristics of transactions of particular type and for associated transacting costs. Besides direct indicators (e.g. frequency of deals with the same partner, term of contract) it should be also used appropriate proxy indicators for expression of uncertainty of transactions, specificity and dependency of assets etc. – e.g. whether there is an alternative supplier (buyer); reason for selecting a particular supplier or buyer (the best price, delayed payments, receiving supplementary service); dentity of the partner (relative, friend, member organization); factors which make difficult procurement or sell (finding a partner, high price level, non-fulfillment of negotiated terms). Goal of analysis is not only to test adequacy of suggested approach, but also to identify transaction difficulties, and suggest directions for improvement of public policy and business strategies.

9. IMPLICATIONS FOR AGRARIAN POLICIES

Transaction costs analysis let us specify existing and emerging problems (difficulties, costs, risks, failures) in the organization of market and private transactions, and define the *economic role of government* as well as *design effective forms for public intervention* in agrarian sector.

The appropriate government involvement is to *create an environment for: decreasing the uncertainty surrounding market and private transactions, and increasing the intensity of exchange, and protecting private rights and investments, and making private investments less dependent etc.* For instance, the State establishes and enforces quality, safety and eco-standards for farm inputs and produces, certifies producers and users of natural resources, regulates employment relations, transfers water management rights to farms associations, sets up minimum farm-gate prices etc. All that facilitates and intensifies (market and private) transactions and increases efficiency.

Next, practically possible modes for increasing appropriability have to be considered. The low appropriability of activity (transaction) is often caused by unspecified or badly specified private rights [1]. In some cases, the most effective government intervention would be to *introduce and enforce new private property right*s – e.g. rights on natural, biological, and environmental resources; tradable quotas for polluting; private rights on intellectual agrarian property and origins etc. That would be efficient when the privatization of resources or the introduction (and enforcement) of new rights is not associated with significant costs (uncertainty, recurrence, and level of specific investment are low). That Government intervention effectively transfers the organization of transactions into the market and private governance, liberalizes market competition and induces private incentives (and investments) in certain activities (the relevant part in Figure 1).

When the appropriability associated with an activity and transaction is low, there is no pure market mode to protect and carry out activity effectively [1]. Therefore, there is a strong need for a third-party public (Government, local authority, international assistance etc.) intervention in order to make such activity possible or more effective. For example, the supply of environmental goods by farmers could hardly be governed through private contracts with the individual consumers because of the low appropriability, high uncertainty, and rare character of transacting (the high costs for negotiating, contracting, charging all potential consumers, disputing etc.). At the same time, the supply of additional environmental protection and improvement service is very costly (in terms of production and organization costs) and would unlikely be carried out on a voluntary basis. Besides, the financial compensation (price-premium) of farmers by the willing consumers through a pure market mode is also ineffective due to the high information asymmetry, massive enforcement costs etc. A third-party mode with a direct public involvement would make that transaction effective: on behalf of the consumers the State agency negotiates with the individual farmers a contract for

“environment conservation and improvement service”, coordinates activities of various agents (including a direct production management), provides public payments for the compensation of farmers, and controls the implementation of negotiated terms.

When market and private sector fails and the needed public intervention does not take place (under or over-intervention) then the sustainable agrarian development is significantly compromised – small-scale and subsistence farming, primitive technologies, blocking of all class of important activities and transactions (agrarian finance, insurance, extension, infrastructural development) come out as a result [5].

10. CONCLUSION

In unreal economy "without transaction costs" the theory of agrarian organization is very simple - there are no agrarian organizations (farms, firms, cooperative etc.). Here the single mechanism for governing (organizing, coordinating) all economic activities is the free market. “Situation of efficiency” is easily achieved since agrarian agents (individuals, households, firms) automatically and costlessly adapt their behavior according to movements of market prices and changes in production technologies. In the real agrarian economy “with transaction costs” there is also place for other effective (non market) modes for optimization of resource use - group farms, cooperatives, contractual arrangements, public firms, hybrid forms. “The old” problem of efficiency founds a "new" dimension through incorporation into analysis of the costs of transacting (in addition to production expenditures). Moreover, accent is put on evaluation of comparative efficiency of all (rather then only a part) of alternative modes for organization of agrarian transactions – “free market” as one extreme and “subsistent farm” or/and |complete (public or private) hierarchy” as another poll(s). It also becomes absurd usage of traditional approaches of “black box” in analysis of governing structures and productivity as an indicator for efficiency of different agrarian organizations.

Our new framework helps us better understand the factors for sustainable development and the “Government’s role” as well. The analyses of transaction costs identify an immense range of “market failures” associated with unspecified or badly specified property rights; inefficient system for enforcement of absolute and contracted rights; high uncertainty and dependency of activity, and low appropriability of rights. The economic agents deal with market deficiency developing different non-market forms for effective governance (contracts, internal modes, collective actions etc.). Nonetheless, private sector also “fails” to safeguard individual rights and carry out certain activities at effective scale. That is particularly true for human and eco-rights, technological and infrastructural development, management of non-renewable resources, environmental conservation activity etc. Thus there is a strong need for a third-party public involvement in market and private transactions though institutional modernization, assistance, regulation, hybrid or public organization.

However, diverse forms of public interventions are with unequal efficiency and the most efficient one is to be selected taking into account the overall transaction costs and contribution to sustainable development. Nevertheless, "government failure" is also possible, and inappropriate involvements, under or over-regulations, mismanagement, corruption etc. are widespread around the world. Agrarian sustainability is significantly compromised when market and private sector fails, and no effective public intervention takes place - imperfect institutional structure is not reformed, delayed or bad government interventions prevail, fruitless international assistance dominate, and needed global governance is not established.

That new concept of efficiency is inseparable part of new understanding of the essence and economic role of agrarian organizations. However, transaction costs economizing is not only a modern academic concept but a real practice in the world we are living in. Here arguments such as "transaction costs are difficult to measure" and therefore "they will be ignored in assessment of efficiency" are not acceptable - not only in research works, but in the farm management and agrarian policies design. .

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